IMPORTANT BIRD AND BIODIVERSITY AREAS IN INDIA

Priority sites for Conservation

Revised and updated 2nd Edition Vol. II

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Second Edition: Revised and Updated

Volume II

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PONDICHERRY (PUDUCHERRY)

R. LEKSHMI

In the tiny union terry of Pondicherry there are only two IBAs, were large number of waterfowl are seen

Pondicherry, now called Puducherry, is one of the smaller Union Territories of India, covering only 49,300 ha and spread over four locations, each having the status of a district: Pondicherry (Tamil Nadu), Karaikal (Tamil Nadu), Yanam (Andhra Pradesh) and Mahe (Kerala). The main territory of Pondicherry lies on the east coast, about 180 km south of Chennai. Karaikal is about 150 km south of Pondicherry on the east coast, Yanam is on the east coast adjoining the Godavari district and Mahe is on the Malabar coast. The physiography is almost all plain and the climate is tropical. Pondicherry and its surrounding enclaves lie on the drainage basin of the Gingee river. Karaikal, located in the fertile Cauvery delta is fed by the waters of Arasalar, Natter, Vanjiar and Nulur rivers. The Mahe river forms the northern boundary of Mahe town. The Gorinagar river flows through the town of Yanam.

The total population of the territory is 1.25 million (2011 Census) of which 32% is rural and 68% urban. The population density is 2,547 persons per sq. km. The total livestock population is 0.16 million (18th livestock census 2007).

Vegetation

Pondicherry is devoid of any natural forest. Forest plantations have been raised in small patches (less than 10 ha) since 1980 under the Social Forestry and 20 Point Programmes. Until 1999, an area of about 7,900 ha had been planted, especially along roadsides, school campuses, parks and *panchayat* lands. There are many water bodies that attract large numbers of waterbirds from November to February, but only two meet the IBA criteria.

IBA site codes	IBA site names	IBA criteria
IN–PY–01	Bahour Lake	A4i, A4iii
IN–PY–02	Ousteri Lake	A4i, A4iii

AVIFAUNA

Bahour Lake was selected on the basis of A4i (1% biogeographic population) and A4iii (≥20,000 waterbirds). Bahour Lake is the second largest wetland in Pondicherry. Balachandran and Alagarrajan (1995) and Jhunjhunwala (1998) conducted surveys of the wetlands of Pondicherry and recorded over 25,000 waterfowl in Bahour belonging to 16 species. Over 10,000 Wigeon *Anas penelope*, and over 3000 Little Grebe *Tachybaptus ruficollis* have been recorded (Balachandran and Alagarrajan 1995). There has been a rise in the number of species visiting this site. For instance, 24 species were recorded in 2004, which increased

to 57 and 60 in 2013 and 2014 respectively. However, the Eurasian Wigeon which was reportedly abundant in 1995 has become a rare visitor, the maximum number sighted being 40 in 2013—the maximum in the last one decade sighted at Bahour. The lake has become well-vegetated with floating and emergent macrophytes, reducing open deep water, and a portion of the lake is permanently above the floodline, reducing the available lake area. The change in lake ecology appears to have affected waterbird composition in the recent years. Little Grebe population has fallen from the huge figures reported in the 1990s to a few hundreds. Counts up to 137 in January 2013 (Atma, unpub.) and 292 in January 2014 accounted for 97% of the total grebe population recorded during the 2014 waterbird survey of Puducherry wetlands (Lekshmi and Davidar 2014).

Ousteri lake is located partly in Pondicherry and partly in Tamil Nadu near Ossudu village in the Villanur commune panchayat, about 12 km from Pondicherry and north of the Kaveri river. Ousteri is an important area for migratory waterfowl and regularly holds over 20,000 birds belonging to 44 species. Balachandran and Alagarrajan (1995) and Jhunjhunwala (1998) recorded over 25,000 waterfowl in Ousteri.

During the last ten years, many ecological changes have been witnessed in the Ousteri Lake mainly due to human interventions, resulting in the change in bird diversity and composition. For example, many species that occurred in larger numbers two decades ago are now uncommon. Balachandran and Alagarrajan (1995) had reported 10,500 Little Cormorant *Phalacrocorax niger* in June and 12,000 in August 1994, which was 7% of the total South Asian population of Little Cormorant of 150,000; and up to 4,600 Eurasian Wigeon *Anas penelope* in February 1994, while the 1% threshold was 2,500 (Wetlands International, 2012). As of 2014, the Cormorant population has come down drastically, with the maximum of 567 birds counted in January (Lekshmi and Davidar, 2014). Balachandran and Alagarrajan (1995) also reported large congregation of up to 2,400 Cotton Pygmy Goose *Nettapus coromandelianus* in June 1995 in Ousteri. The latest observations show a drastic decline in Cotton Pygmy Goose population, the maximum sighted being 17 in July 2014. There are records of Mallard *Anas platyrhynchos*, Gadwall *A. strepera*, Common Teal, Northern Shoveler *A. clypeata* and Tufted Duck *Aythya fuligula* before 1998 (Chari *et al*. 2004). The data of Chari *et al*. (2004) show that in certain years between 1993 and 1997, Northern Pintail, Tufted Duck, Common Pochard *Aythya ferina* and Cotton Pygmy Goose were abundant.

THREATS AND CONSERVATION ISSUES

Key threats to the IBA sites are agricultural intensification and expansion, poaching, fisheries and livestock grazing.

Bahour is the main source of irrigation for the surrounding fields and is used for grazing and agriculture. Agricultural run-off from the surrounding fields, and pesticides and fertilisers from agriculture could pollute the lake in the dry months. There are instances of poaching and the lake is under no formal protection. Twenty-two villages claim territory in the area, which is surrounded by agricultural fields. Salt is produced in the area and silt is extracted. Fishing and collection of firewood, grasses and reeds is done for local consumption. Overgrazing, intensification of agriculture and the increased use of pesticides are rapidly becoming serious threats. All large species of birds, including pelicans, storks and flamingoes are poached.

The Wetlands International recognises Ousteri Lake as an important wetland of Asia. The lake is used for fishing, irrigation and plays a crucial role in recharging the aquifers. The lake is heavily silted and has been reduced to 80% of its original area. Excessive grazing by livestock occurs. Waterfowl are poached by netting and shooting. Fishing, grazing of livestock and harvesting of reeds and grasses are done by villagers living on the periphery of the lake. There are plans to develop the lake as a holiday resort with hotels and sporting facilities to cater to the inhabitants and tourists of Pondicherry. Water sports would cause excessive damage to nesting birds.

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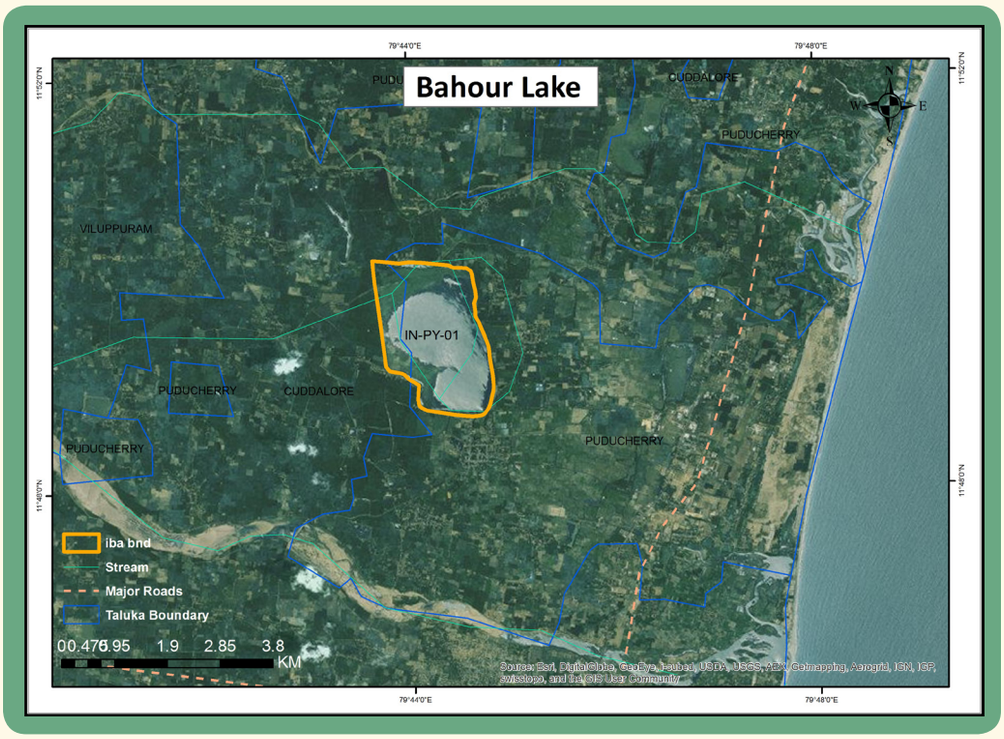
BAHOUR LAKE

IBA Site Code	:	IN-PY-01	**Area**	:	618 ha
State	:	Pondicherry	**Altitude**	:	8 m
District	:	Pondicherry	**Rainfall**	:	1,225 mm
Coordinates	:	12° 02' 07" N, 79° 51' 19" E	**Temperature**	:	28 °C to 39 °C
			Biogeographic Zone	:	Deccan Peninsula
Ownership	:	State	**Habitats**	:	Aquatic (Reservoir)

IBA CRITERIA: A4i (≥1% of biogeographical population), A4iii (≥20,000 waterbirds)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

Bahour lake is the second largest wetland in Pondicherry. It is located near Bahour village, *c*. 20 km from Pondicherry city, north of the Pennaiyar river. It is a seasonal freshwater wetland that receives water during the monsoon between September and March. The lake is dry for about five months.

AVIFAUNA

Balachandran & Alagarrajan (1995), and Jhunjhunwala (1998) conducted surveys of the wetlands of Pondicherry and recorded over 25,000 waterfowl in Bahour, belonging to 16 species. Over 10,000 Eurasian Wigeon *Anas penelope* and over 3,000 Little Grebe *Tachybaptus ruficollis* have been recorded (Balachandran & Alagarrajan 1995). Both occur much above the 1% population threshold determined by Wetlands International (2012). For instance, according to Wetlands International (2012), the non-breeding population of Eurasian Wigeon wintering in South Asia is 250,000. This means that at least 4% of this population used to be found in Bahour lake.

Observations by Lekshmi & Atma (*unpubl*.) indicate that there is a rise in the number of species using this wetland in the last three years. Species count increased to 57 and 60 in 2013 and 2014 respectively, from 26 species recorded in 2004 by Atma. However, the Eurasian Wigeon which was reportedly abundant in 1995 has become a rare visitor, the maximum number sighted being 40 in 2013 in the last one decade, often not sighted at Bahour. Direct observation in the monsoon season indicated that the lake has become well vegetated with floating and emergent macrophytes, reducing open deep water, and a portion of the lake is permanently above the floodline, reducing the available lake area. The change in lake ecology appears to

R. LEKSHMI

Studies conducted durin gthe last 25 years at Bahour Lake show population fluctuations species composition. Some species such as Eurasian wigeon *Anas penelope* that use to be present in thousands has become a rare winter visitor

have affected waterbird composition in recent years. Little Grebe population has fallen from the larger figures reported in 1990s to a few hundreds. Counts up to 137 in January 2013 (Atma, *unpubl.*) and 292 in January 2014 accounted for 97% of the total grebe population recorded during the 2014 waterbird survey of Puducherry wetlands (Lekshmi & Davidar 2014).

Population fluctuation was observed with several peaks in December, February, and April, when certain species become abundant (R. Lekshmi, *pers. comm*. 2014). In April, the abundance is caused by water scarcity and return migration, when many of the surrounding wetlands completely dry up, and water is available only at Ousteri and Bahour. The total population estimate of waterfowl is around 5,000 for the year (Lekshmi, *pers. comm*. 2014). Waterbird survey in January 2014 recorded 1,360 birds belonging to 49 species (Lekshmi & Davidar 2014). The majority of the duck population at Bahour is comprised of Garganey *Anas querqudula* (up to 400), Lesser Whisting Duck *Dendrocygna javanica* (372) and Fulvous Whistling Duck *D. bicolor* (69) in 2014. Fulvous Whistling Duck was a southward range extension. As of 2014, population of Asian Openbill *Anastomus oscitans* (14), Near Threatened birds like Painted Stork *Mycteria leucocephala* (32) and Oriental Darter *Anhinga melanogaster* (20) are stable across months while population counts of Spot-billed Pelican *Pelecanus philippensis* (up to 220), Eurasian Spoonbill *Platalea leucorodia* (up to 31), Glossy Ibis *Plegadis falcinellus* (79), and Black-headed Ibis (13) were observed in certain months.

In March which is the outward migration period, Bahour lake provides staging and feeding sites for thousands of migratory waterfowl, waders, and terns. For example, in March 1995, Balachandran & Alagarrajan (1995) counted about 25,000 waterfowl. In the subsequent decade, such high population influx was not observed. During April–May 2014, Whiskered Terns *Chlidonias hybrida* and waders such as Black-tailed Godwit *Limosa limosa*, Black-winged Stilt *Himantopus himantopus*, Common Sandpiper *Actitis hypoleucos*, Green Sandpiper *Tringa ochropus*, Wood Sandpiper *Tringa glareola*, Common Greenshank *Tringa nebularia*, Little Stint *Calidris minuta* and Grey Heron (22) *Ardea cinererea* congregated at Bahour (Lekshmi 2014). February–April is the best season to sight Glossy Ibis (70+), Eurasian Spoonbill (31), Black-winged Stilt (150+), Spot-billed Duck *Anas poecilrhyncha* (80), and Black-headed Ibis (13) at Bahour.

Birds such as White Stork *Ciconia ciconia*, Shaheen Falcon *Falco peregrines peregtinator*, Montagu's Harrier *Circus pygargus*, European Roller *Coracias garrulus*, Pacific Golden Plover *Pluvialus fulva*, Comb-Duck *Sarkiodornis melanotus*, Black-tailed Godwit, Ferruginous Pochard *Aythya nyroca*, Common Pochard *Aythya ferina*, Black Bittern *Dupetor flavicollis*, and Grey-headed Lapwing *Vanellus cinereus* are uncommon vistors sighted only once in the last decade, mostly in 2013 and 2014 (Lekshmi & Atma, *unpubl.*).

After April the water is drained for fishing, but by that time most of the migratory birds move out. The impact of

NEAR THREATENED	
Spot-billed Pelican	*Pelecanus philippensis*
Oriental Darter	*Anhinga melanogaster*
Ferrugineous Pochard	*Aythya nyroca*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephala*
Black-tailed Godwit	*Limosa limosa*
European Roller	*Coracias garrulus*

R. LEKSHMI

More than 60 species of waterbirds are found in Bahour Lake, many much above their A4i ≥1% of biogeographical population) population threshold. Bahour Lake also qualifies A4i criterion (A4iii = ≥ 20,000 waterbirds)

draining of water on resident birds needs to be studied to be able to provide management recommendations. In summer months intense fishery activities cause constant disturbance in the lake water. Rice bran and other powdered fish feed are added at regular intervals for improved fish harvest, which could have some effect on lake eutrophication. Buffalo and cow dung released in the lake during grazing and agricultural runoff further enhance the nutrient load of the lake.

OTHER KEY FAUNA

As this is a wetland surrounded by agricultural fields and human habitation, no mammal or reptile of conservation concern is found here. However, the abundance of *Cadaba fruticosa*, *Maerua* sp., *Capparis zeylanica*, *Azima tetracantha*, and *Tragia involucrata* along the lake margin has resulted in high diversity and abundance of certain butterflies like Plain Orange-Tip, White Orange-Tip, Yellow Orange-Tip, Crimson Tip, Small Salmon Arab, and Angled Castor which are rare elsewhere in Puducherry.

LAND USE

- Water management
- Agriculture
- Fisheries
- Livestock grazing

THREATS AND CONSERVATION ISSUES

- Agricultural intensification and expansion
- Poaching
- Fisheries
- Livestock grazing

Bahour is the main source of irrigation for the surrounding fields. Agricultural runoff from the surrounding fields, pesticides and fertilizers from the agriculture fields, and washing clothes in the lake in dry months pollute the lake. There are instances of poaching, and the lake is under no formal protection.

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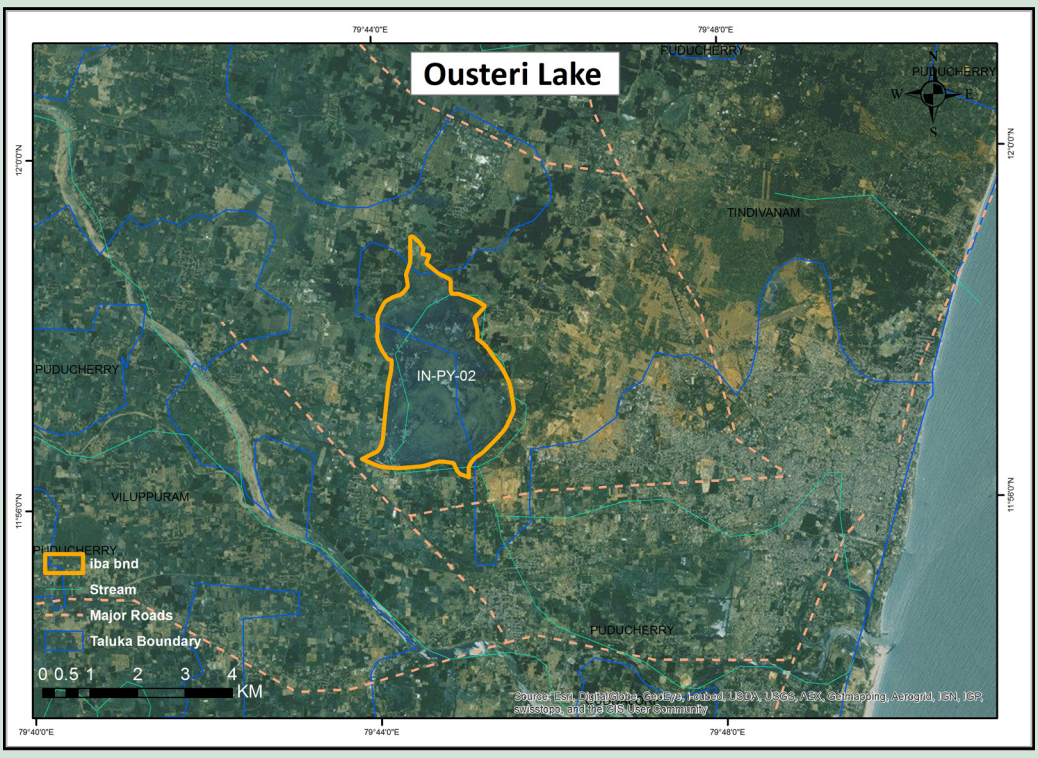
OUSTERI LAKE

IN-PY-02

IBA Site Code	:	IN-PY-02	**Area**	:	800 ha
State	:	Pondicherry and Tamil Nadu	**Altitude**	:	10 m
District	:	Pondicherry	**Rainfall**	:	1,205 mm
Coordinates	:	11° 56' 51" N, 79° 44' 13" E	**Temperature**	:	28 °C to 39 °C
			Biogeographic Zone	:	Coasts
Ownership	:	State	**Habitats**	:	Aquatic (Reservoir)

IBA CRITERIA: A4i (≥1% biogeographic population threshold) and A4iii (≥ 20,000 waterbirds)

PROTECTION STATUS: Officially protected. Puducherry Government declared Ousteri a Bird Sanctuary in 2008 and Tamil Nadu Government declared it a bird sanctuary in 2014.



GENERAL DESCRIPTION

Ousteri is a centuary old man-made lake located on Puducherry-Villupuram road (IL&FS, 2012) near Ossudu village in the Villanur commune *panchayat* about 12 km from Pondicherry, north of the Kaveri river. It has an area of 800 ha, 390 ha of which falls in Puducherry and rest in Tamil Nadu. The lake depends on its catchment for 75% of its water, the rest comes from diversion channels. The lake is also fed by an intermittent river viz. Sankaraparni and has a bund on its western bank. Part of the bund is well protected by trees. The southern part of lake is deeper open water while northern and north western parts are shallower with reed beds, progressively merging into the agricultural landscape. It has an average depth of 1 m and in summer months, water level falls. It becomes transformed to a shallow water body of less than half of its original expanse with exposed mudflats, between May and September.The larger area and fluctuating water level attract a variety of resident and migratory birds in good numbers across different months. The lake has a few islets that serve as roost sites for a variety of waterbirds including the near-threatened Spot-billed Pelican, Painted Storks and Oriental Darter.

Besides being an internationally important site for migratory birds, Ousteri is important for irrigation and tourism. The lake has rich floral diversity of over 200 species of plants belonging to 60 families. Lake is vast open water body with extensive aquatic flora of the floating (*Salvinia* sp., *Eichorrnea crassipes*), floating leaf (*Nelumbo nucifera,*

Nymphea nouchalii), submerged (*Najas* sp.,*Vallisneria* sp.) and emergent type (sedges, grasses, *Typha angustifolia*) along the shallow margins and inlets.Typha and Sedge beds are important breeding grounds of certain birds.

AVIFAUNA

Ousteri is an important area for migratory waterfowl and regularly holds over 20,000 birds belonging to more than 85 species. (Balachandran and Alagarrajan, 1995; Jhunjhunwala, 1998; Murugesan *et al*. 2013; Lekshmi, unpublished). One year bird monitoring at Ousteri through monthly surveys by Balachandran and Alagarrajan (1995) have revealed that many species occur at Ousteri much above their 1% threshold level determined by Wetlands International (2012). For example, they have reported 10,500 Little Cormorant *Phalacrocorax niger* in June and 12,000 in August 1994, which is 7% of the total South Asian population of Little Cormorant of 150,000; and up to 4,600 Eurasian Wigeon *Anas penelope* in February 1994, while the 1% threshold was 2,500 (Wetlands International, 2012). As of 2014, the Cormorant population has come down drastically, maximum 567 birds counted in January (Lekshmi and Davidar, 2014). Balachandran and Alagarrajan (1995) have also reported large congregation of upto 2,400 Cotton Pygmy Goose *Nettapus coromandelianus* in June at Ousteri. This is one of the largest known congregations of this species in south India. Latest observations show a drastic decline in Cotton Pygmy Goose population, maximum sighted being 17 in July 2014. There are records of Mallard *Anas platyrhynchos*, Gadwall *A. strepera*, Common Teal, Northern Shoveler *A. clypeata* and Tufted Duck *Aythya fuligula* before 1998 (Chari *et al*. 2004). The data of Chari *et al*. (2004) show that in certain years between 1993 and 1997, Northern Pintail, Tufted Duck, Common Pochard *Aythya ferina* and Cotton Pygmy Goose were abundant.

In India, Common Coot *Fulica atra* is resident in south India, while purely migratory in north India (Ali and Ripley 1987; Grimmett *et al*. 1998). In winter, the resident population is augmented by migratory birds from the temperate regions. In their study at Ousteri, Balachandran and Alagarrajan (1995) found that in summer months (June- July) Coot population was at peak with about 11,000-9000 birds which came down to a few hundred (650-450) in winter months between October and February due to migrating out. They further noted that Red Data book species like Spot-billed Pelican *Pelecanus philippensis* (maximum of 6 seen in April 1994), Darter *Anhinga melanogaster* (maximum 2), Painted Stork *Mycteria leucocephala* (115 counted in September 1994), Eurasian Spoonbill *Platalea leucorodia* (only 6 seen in June 1994) and Black-headed Ibis or White Ibis *Threskiornis melanocephala* (up to 200 counted in June 1994) are also present in the lake (Balachandran and Alagarrajan (1995).

R. LEKSHMI AND R. RAJAMANICKAM

Thanks to its abandoned bird life and scenic beauty, Ousteri Lake have become major tourist attraction

R. LEKSHMI AND R. RAJAMANICKAM

Studies led by Priya Devidar and her students have reviewed that 85 species of waterfowl are found in the Osteri Lake. Many species occur much above their 1% threshold

Regular observations between 2012 and 2014 by Lekshmi and Rajamanikam (unpublished) suggest a change in the population structure of avifauna of Ousteri when compared to the 1990s. According to them, winter Duck population is mainly comprised of Eurasian Wigeon and Garganey. They also note that Eurasian Wigeon (maximum 220 birds sighted between December 2012 and March 2013) stays through out winter in the company of Coots while Garganey use it as a stop-over, maximum 133 birds sighted in January 2014. Contrary to the 1990s trend as reported by Balachandran and Alagarrajan(1995), their observations indicate not only a drastic fall in Coot population to a few hundreds (maximum 250 in February 2013) but also that Coots have become purely migratory at Ousteri, rarely sighted in the summer months.They also note a steady increase in Glossy Ibis *Plegadis falcinellus* population, unreported in the 1990s by Balachandran and Alagarrajan (1995) and Chari *et al*. (2004). Now they are seen year round in the lake (over 600 birds were regularly observed during August-October 2014). It has possibly become resident in the region.

Lekshmi and Rajamanikam (unpublished) surveys indicate a strong come back for IUCN redlisted species from the 1990s levels, indicating effectiveness of collective conservation measures. A maximum of 132 Oriental Darter (in Januay), 38 Painted Stork (in October), 49 Eurasian Spoonbill (in August), 20 White-Ibis (in September) and 102 Spot-billed Pelicans (in September) were observed in 2014.

Maximum number of birds were sighted during July-September when lake dry up, the shallow water and mudflats attract large congregations of waterfowl. During the period Ousteri becomes a refuge for over-summering Grey Herons (44 sighted in July 2014), breeding Black-winged Stilt (400 seen in July 2014), Glossy Ibis, White Ibis, egrets, cormorants, Oriental Darters, Spot-billed Pelicans, Painted Stork, Eurasian Spoonbill, Spot-billed Duck, Lesser Whistling Ducks and Greater Flamingo. Greater Flamingo has recently become the major attraction of Ousteri, which started to appear in small numbers 2012 onwards .They were observed to prefer June-October to forage at Ousteri when water levels are low. Their number has gone up from 47 in October 2013 and 1800 in early September, to 3,000 in October 2014 with a high proportion of juveniles in the flock. It is possible that the number of resident flamingoes is being augmented by the migrating flamingos from the north-west. Tolerant of human presence, Greater Flamingo forages on the edges of the Lake in flocks and allows the tourist boat to approach them closer without being disturbed. In 2013, Greater Flamingos were not observed after October, possibily due to rise in water level.

Not only large waterfowl, but waders and terns also visit Ousteri in large numbers. In October 2014 Lekshmi

and Rajamanikam (unpublished) observed 1200 Ruff *Philomachus pugnax*, 3000 Little Stint *Calidris minuta*, 23 Curlew Sandpiper *Erolia ferruginea*, 400 Lesser Sand Plover *Charadrius mongolus* and 13 Wood Sandpiper *Tringa glareola* on the mudflats of Ousteri. A variety of terns such as Caspian Tern *Hydroprogne caspia*, Whiskered Tern *Chlidonias hybrida*, Little Tern *Sternula albifrons albifrons*, Common Tern *Sterna hirundo* and Gull-billed Tern *Gelochelidon nilotica* are common winter visitors to Ousteri. Data show that Brown Crake *Porzana akool*, Grey-headed Lapwing *Vanellus cinereus*, Black-capped Kingfisher *Halcyon pileata*, Western Osprey *Pandion haliaetus*, Peregrine Falcon *Falco peregrinus*, Common Snipe *Gallinago gallinago*, Black Bittern *Dupetor flavicollis*, Red-rumped Swallow *Hirundo daurica*, Oriental Pratincole *Glareola maldivarum*, River Tern *Sterna aurantia* are uncommon but regular winter visitors (Lekshmi and Rajamanikam unpublished; Murugesan *et al*. 2013). Black-winged Kite *Elanus caeruleus*, Greater Painted Snipe *Rostratula benghalensis*, Great Grey Shrike *Lanius excubitor*, Great Cormorant *Phalacrocorax carbo*, Jerdon's Bushlark *Mirafra affinis*, and Streaked Weaver *Ploceus manyar* are rare resident birds (Lekshmi, pers. obs.; Atma Reddy, pers. comm.. 2014, Alexander, pers. comm. 2014).

Most importantly, Ousteri acts as a connecting link between near by Kaliveli and Bahour IBAs which are largely seasonal; and birds shift the foraging ground among these wetlands across months. Ousteri also offers refuge to water birds from both wetlands when they completely dry out in summer, which again emphasise the importance of maintaining a chain of IBAs for sustaining bird population of a region.

OTHER KEY FAUNA

Mammals like Golden Jackal *Canis aureus indicus*, Black-naped Hare *Lepus nigricollis*, Asian Palm Civet *Paradoxurus hermaphroditus*, and Indian Gray Mangoose *Herpestes edwardsii* are found here. Alexander and Jayakumar (2014) have reported 23 species of reptiles in and around Ousteri Lake. Some of them are Termite hill Gecko *Hemidactylus triedrus,* Buff-striped Keelback *Amphiesma stolata*, Variegated Kukri *Oligodon taeniolatus,* Brahminiy Blind Snake *Ramphotyphlops braminus* and Monitor Lizard*Varanus bengalensis*

LAND USE

- Tourism
- Water management
- Fisheries
- Agriculture

THREATS AND CONSERVATION ISSUES

- Poachng
- Tourism
- Eutrophication and invasive plants
- Fisheries
- Chemical agriculture and change in traditional landuse
- Industries

The Ousteri Lake is used for fishing, supplies water for irrigation and plays a crucial role in recharging the aquifers. The lake is heavily silted and has reduced to 80% of its original area. Waterfowl poaching by netting, shooting and poisoning has become a major problem in achieving conservation objectives at Ousteri. Fishing, grazing of livestock and harvesting of reeds and aquatic vegetation are done by villagers living in the periphery of the lake. In order to allow free movement of fish nets, fishermen remove *Vallisneria spiralis*, one of the food plants of waterfowl. The gill nets too, when left alone for long periods in water, entangle Grebe and other birds (Balachandran and Alagarrajan, 1995). Another problem of Ousteri is the spread of aquatic weeds such as, *Eichhornia crassipes and Nelumbo nucifera* that have reduced the available open water area of the lake (not disturbed by boating) by about 30%.

The high plant growth is due to nutrient enriched run-off and feeder channels laden with fertilizers and municipal sewage (cultural eutrophication). Pesticide poisoning of insects can adversely affect insectivorous birds of the paddy field. There are numerous industries located around the lake that pollute the lake directly and indirectly.

Commercial tourism activities in the lake undertaken by Tourism Department after 2004 could have affected the duck, cormorant and coot populations, which is evident when comparing recent data with bird population data of 1990s. Motorised boating creates much noise, constant disturbance and turbulence of open water, releases much kerosene and also constantly frightens the resting birds. The effect of kerosene poisoning on aquatic prey species is not yet studied at Ousteri.There are plans to develop the lake as a holiday resort with hotels and sporting facilities to cater to the inhabitants and tourists of Pondicherry. Water sports would cause excessive damage to the nesting birds.

The Forest Department should develop a management plan, in collaboration with local villagers, fishermen, naturalists and officials of the Irrigation Department, to derive maximum benefit both for the local people and birds. Adoption of 'eco-touism'concept with a priority to scientific waste management, no-go zones restricting boating in sensitive locations of lake and training local community as touist guides can rectify the negative aspects of the current practice. Local community, especially *Nari-kuravar*, around Ousteri traditionally engages in hunting, and fishing as means of livelihood. Given poaching is the main obstacle for conservation at Ousteri, engaging local community in conservation and devicing alternative livelihood options

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Ousteri Lake acts as a connecting link between nearby Kaliveli and Bahour IBAs which are largely seasonal, offering refuge to waterbirds from both wetlands when they completely dry out in summer

with the aid of Forest Department are the best alternatives. Moreover, co-ordination between Forest Department and Tourism Department as well as proper guidelines to the Sanctuary staff and visitors are also recommended to restore the waterfowl population

KEY CONTRIBUTORS

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